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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/602,114	06/23/2003	Sivakumar Gopalnarayanan	60,246-213/10646	9103
26096	7590	07/02/2004	EXAMINER	
CARLSON, GASKEY & OLDS, P.C. 400 WEST MAPLE ROAD SUITE 350 BIRMINGHAM, MI 48009			DOERRLER, WILLIAM CHARLES	
			ART UNIT	PAPER NUMBER
			3744	

DATE MAILED: 07/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/602,114	<b>Applicant(s)</b> GOPALNARAYANAN ET AL.	
	<b>Examiner</b> William C Doerrler	<b>Art Unit</b> 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-7, 11-18 and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gustafson et al in view of Lorentzen et al.

Gustafson et al discloses applicants' basic inventive concept, a refrigeration system which uses the air temperature to control a variable speed fan which blows air over the heat accepting heat exchanger of the system, substantially as claimed with the exception of using the air flow control system in a transcritical refrigeration system which uses carbon dioxide as the refrigerant. Lorentzen et al shows carbon dioxide transcritical refrigeration systems to be old in the refrigeration art. It would have been

obvious to one of ordinary skill in the art at the time of applicants' invention from the teaching of Lorentzen et al to use a transcritical system to provide efficient refrigerant with an environmentally safe refrigerant while still providing efficiency improvements derived from controlling the air over the heat accepting heat exchanger. In regard to claims 7,11,12,18 and 23, specific threshold temperatures are seen as a matter of obvious design choice for an ordinary practitioner depending on the environment and use of the system.

Claims 1-5,8,9,11-16,19,20 and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Erdman et al in view of Lorentzen et al.

Erdman et al discloses applicants' basic inventive concept, a refrigeration system which uses the air temperature to control a variable speed fan which blows air over the heat accepting heat exchanger of the system, substantially as claimed with the exception of using the air flow control system in a transcritical refrigeration system which uses carbon dioxide as the refrigerant. Lorentzen et al shows carbon dioxide transcritical refrigeration systems to be old in the refrigeration art. It would have been obvious to one of ordinary skill in the art at the time of applicants' invention from the teaching of Lorentzen et al to use a transcritical system to provide efficient refrigerant with an environmentally safe refrigerant while still providing efficiency improvements derived from controlling the air over the heat accepting heat exchanger. In regard to claims 9,11,12,20 and 23, specific threshold temperatures are seen as a matter of obvious design choice for an ordinary practitioner depending on the environment and use of the system.

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dennis in view of Lorentzen et al.

Dennis discloses applicants' basic inventive concept, a refrigeration system which controls a variable speed fan which blows air over the heat accepting heat exchanger of the system, substantially as claimed with the exception of using the air flow control system in a transcritical refrigeration system which uses carbon dioxide as the refrigerant. Lorentzen et al shows carbon dioxide transcritical refrigeration systems to be old in the refrigeration art. It would have been obvious to one of ordinary skill in the art at the time of applicants' invention from the teaching of Lorentzen et al to use a transcritical system to provide efficient refrigerant with an environmentally safe refrigerant while still providing efficiency improvements derived from controlling the air over the heat accepting heat exchanger.

Claims 10 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Erdman et al in view of Lorentzen et al as applied to claims 1-5,8,9,11-16,19,20 and 22-25 above, and further in view of Dennis.

Erdman et al, as modified, discloses applicants' basic inventive concept, a transcritical refrigeration system with a means to control the air flow over the heat accepting heat exchanger in relation to the temperature of the air passing over it, substantially as claimed with the exception of using the refrigerant pressure as a control parameter. Dennis shows this feature to be old in the refrigeration system airflow control art. It would have been obvious to one of ordinary skill in the art at the time of applicant's invention from the teaching of Dennis to modify the airflow controlling refrigeration

system of Erdman et al by using refrigerant pressure as a control parameter to ensure efficient operation of the refrigeration system.


### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Howard shows a transcritical refrigeration system. Howenstine et al, Marques et al, Iida, Seem and Sato et al show refrigeration systems with temperature controlled variable speed fans.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William C Doerrler whose telephone number is (703) 308-0696. The examiner can normally be reached on Monday-Friday 6:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Denise Esquivel can be reached on (703) 308-2597. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
William C Doerrler  
Primary Examiner  
Art Unit 3744

WCD